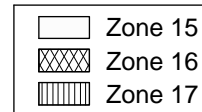
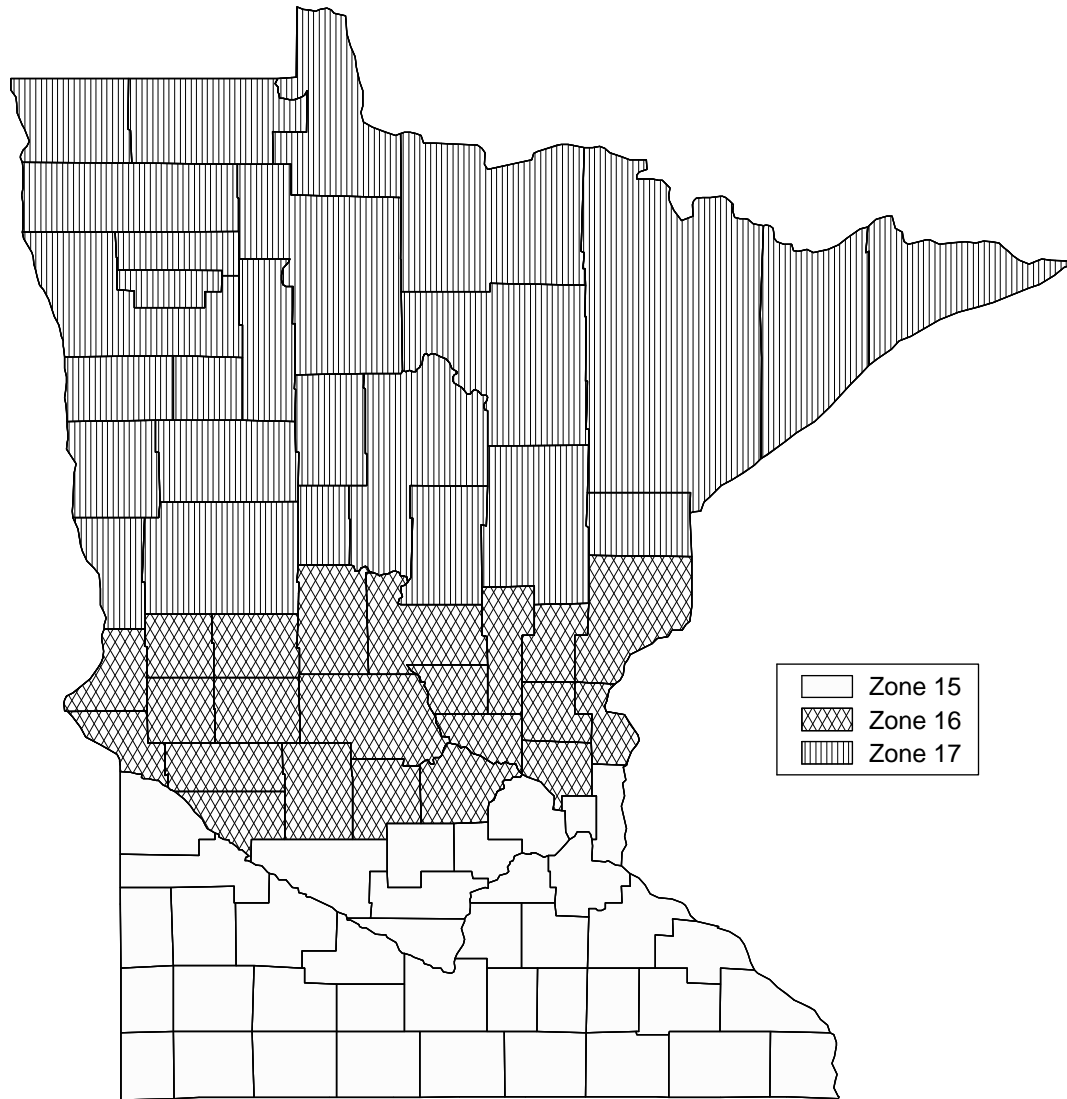


# MINNESOTA



Zone	County	Zone	County
17	Aitkin	17	Marshall
16	Anoka	15	Martin
17	Becker	15	McLeod
17	Beltrami	16	Meeker
16	Benton	16	Mille Lacs
16	Big Stone	16	Morrison
15	Blue Earth	15	Mower
15	Brown	15	Murray
17	Carlton	15	Nicollet
15	Carver	15	Nobles
17	Cass	17	Norman
16	Chippewa	15	Olmsted
16	Chisago	17	Otter Tail
17	Clay	17	Pennington
17	Clearwater	16	Pine
17	Cook	15	Pipestone
15	Cottonwood	17	Polk
17	Crow Wing	16	Pope
15	Dakota	15	Ramsey
15	Dodge	17	Red Lake
16	Douglas	15	Redwood
15	Faribault	15	Renville
15	Fillmore	15	Rice
15	Freeborn	15	Rock
15	Goodhue	17	Roseau
16	Grant	15	Scott
15	Hennepin	16	Sherburne
15	Houston	15	Sibley
17	Hubbard	17	St Louis
16	Isanti	16	Stearns
17	Itasca	15	Steele
15	Jackson	16	Stevens
16	Kanabec	16	Swift
16	Kandiyohi	16	Todd
17	Kittson	16	Traverse
17	Koochiching	15	Wabasha
15	Lac Qui Parle	17	Wadena
17	Lake	15	Waseca
17	Lake Of The Woods	15	Washington
15	Le Sueur	15	Watsonwan
15	Lincoln	17	Wilkin
15	Lyon	15	Winona
17	Mahnomen	16	Wright
		15	Yellow Medicine

# Prescriptive Packages - Zone 15

1992 Model Energy Code for Single-Family Buildings



Package	MAXIMUM		MINIMUM						Heating/Cooling Equipment Efficiency <sup>9</sup>
	Glazing Area Percent <sup>1</sup>	Glazing U-Value <sup>2</sup>	Ceiling R-Value <sup>3</sup>	Wall R-Value <sup>4</sup>	Floor R-Value <sup>5</sup>	Basement Wall R-Value <sup>6</sup>	Slab Perimeter R-Value <sup>7</sup>	Crawl Space Wall R-Value <sup>8</sup>	
1	12%	0.45	R-38	R-19	R-26	R-13	--	R-30	Normal
2	12%	0.35	R-38	R-19	R-19	R-9	R-5	R-14	Normal
3	15%	0.40	R-38	R-19	R-30	R-15	--	--	Normal
4	15%	0.35	R-38	R-19	R-26	R-12	R-18	R-24	Normal
5	18%	0.35	R-38	R-21	R-30	R-15	--	--	Normal
6	12%	0.55	R-38	R-15	R-19	R-8	R-2	R-15	High Heating
7	15%	0.55	R-38	R-19	R-19	R-9	R-3	R-18	High Heating
8	18%	0.50	R-38	R-19	R-21	R-11	R-7	R-28	High Heating
9	22%	0.45	R-38	R-19	R-30	R-13	R-18	--	High Heating
10	22%	0.40	R-49	R-19	R-19	R-9	R-3	R-17	High Heating
11	12%	0.60	R-38	R-15	R-19	R-9	R-4	R-20	High Heat/Cool
12	15%	0.60	R-38	R-19	R-21	R-11	R-7	R-30	High Heat/Cool
13	15%	0.50	R-49	R-15	R-19	R-9	R-3	R-18	High Heat/Cool
14	18%	0.50	R-49	R-15	R-30	R-13	R-16	--	High Heat/Cool
15	22%	0.45	R-38	R-19	R-26	R-13	R-14	--	High Heat/Cool

-- Hyphens (--) indicate that the package which contains the hyphens cannot be used with the indicated foundation type (slab or crawl space).

# Prescriptive Packages - Zone 16

1992 Model Energy Code for Single-Family Buildings



Package	MAXIMUM		MINIMUM						Heating/Cooling Equipment Efficiency <sup>9</sup>
	Glazing Area Percent <sup>1</sup>	Glazing U-Value <sup>2</sup>	Ceiling R-Value <sup>3</sup>	Wall R-Value <sup>4</sup>	Floor R-Value <sup>5</sup>	Basement Wall R-Value <sup>6</sup>	Slab Perimeter R-Value <sup>7</sup>	Crawl Space Wall R-Value <sup>8</sup>	
1	12%	0.45	R-38	R-19	R-26	R-22	--	R-30	Normal
2	12%	0.35	R-38	R-19	R-19	R-14	R-6	R-14	Normal
3	15%	0.40	R-38	R-19	R-30	R-28	--	--	Normal
4	15%	0.35	R-38	R-19	R-26	R-19	R-19	R-24	Normal
5	18%	0.35	R-49	R-19	R-30	R-26	--	--	Normal
6	12%	0.70	R-38	R-15	R-30	R-26	R-17	--	High Heating
7	15%	0.60	R-38	R-19	R-21	R-18	R-6	R-28	High Heating
8	18%	0.50	R-38	R-19	R-21	R-17	R-5	R-24	High Heating
9	22%	0.40	R-38	R-15	R-26	R-24	R-13	--	High Heating
10	22%	0.35	R-49	R-15	R-19	R-13	R-2	R-15	High Heating
11	12%	0.65	R-49	R-15	R-19	R-16	R-4	R-22	High Heat/Cool
12	12%	0.60	R-38	R-15	R-19	R-15	R-3	R-18	High Heat/Cool
13	15%	0.65	R-38	R-19	R-26	R-24	R-14	--	High Heat/Cool
14	15%	0.50	R-38	R-15	R-19	R-15	R-4	R-20	High Heat/Cool
15	18%	0.50	R-38	R-19	R-19	R-16	R-5	R-24	High Heat/Cool
16	22%	0.45	R-49	R-19	R-26	R-19	R-7	--	High Heat/Cool
17	22%	0.40	R-38	R-19	R-19	R-14	R-3	R-18	High Heat/Cool

-- Hyphens (--) indicate that the package which contains the hyphens cannot be used with the indicated foundation type (slab or crawl space).

# Prescriptive Packages - Zone 17

1992 Model Energy Code for Single-Family Buildings



Package	MAXIMUM		MINIMUM						Heating/Cooling Equipment Efficiency <sup>9</sup>
	Glazing Area Percent <sup>1</sup>	Glazing U-Value <sup>2</sup>	Ceiling R-Value <sup>3</sup>	Wall R-Value <sup>4</sup>	Floor R-Value <sup>5</sup>	Basement Wall R-Value <sup>6</sup>	Slab Perimeter R-Value <sup>7</sup>	Crawl Space Wall R-Value <sup>8</sup>	
1	12%	0.50	R-49	R-18	R-30	R-28	--	--	Normal
2	12%	0.40	R-38	R-19	R-21	R-18	R-17	R-19	Normal
3	15%	0.40	R-38	R-19	R-30	R-30	--	--	Normal
4	15%	0.35	R-49	R-19	R-21	R-17	R-16	R-19	Normal
5	18%	0.35	R-38	R-21	R-30	R-28	--	--	Normal
6	18%	0.35	R-49	R-26	R-21	R-19	--	R-22	Normal
7	12%	0.65	R-38	R-18	R-15	R-13	R-3	R-14	High Heating
8	15%	0.60	R-38	R-20	R-19	R-17	R-7	R-24	High Heating
9	15%	0.55	R-49	R-18	R-15	R-13	R-3	R-14	High Heating
10	18%	0.55	R-49	R-21	R-21	R-20	R-10	R-30	High Heating
11	18%	0.50	R-38	R-19	R-19	R-17	R-7	R-24	High Heating
12	22%	0.45	R-38	R-18	R-26	R-26	--	--	High Heating
13	22%	0.45	R-49	R-20	R-21	R-19	R-9	R-28	High Heating

-- Hyphens (--) indicate that the package which contains the hyphens cannot be used with the indicated foundation type (slab or crawl space).

# Prescriptive Packages - Zone 15

1992 Model Energy Code for Multifamily Buildings



Package	MAXIMUM		MINIMUM						Heating/Cooling Equipment Efficiency <sup>9</sup>
	Glazing Area Percent <sup>1</sup>	Glazing U-Value <sup>2</sup>	Ceiling R-Value <sup>3</sup>	Wall R-Value <sup>4</sup>	Floor R-Value <sup>5</sup>	Basement Wall R-Value <sup>6</sup>	Slab Perimeter R-Value <sup>7</sup>	Crawl Space Wall R-Value <sup>8</sup>	
1	15%	0.75	R-30	R-13	R-11	R-6	R-2	R-6	Normal
2	20%	0.60	R-38	R-13	R-11	R-6	R-2	R-6	Normal
3	25%	0.50	R-30	R-15	R-11	R-6	R-2	R-6	Normal
4	30%	0.50	R-38	R-13	R-21	R-12	R-17	R-24	Normal
5	15%	Any	R-19	R-11	R-13	R-6	R-2	R-8	High Heating
6	15%	0.45	R-38	R-17	R-11	R-0	R-0	R-0	High Heating
7	20%	0.75	R-13	R-13	R-11	R-5	R-0	R-7	High Heating
8	20%	0.35	R-38	R-17	R-11	R-0	R-0	R-0	High Heating
9	30%	0.65	R-30	R-13	R-15	R-7	R-2	R-11	High Heating

# Prescriptive Packages - Zone 16

1992 Model Energy Code for Multifamily Buildings



Package	MAXIMUM		MINIMUM						Heating/Cooling Equipment Efficiency <sup>9</sup>
	Glazing Area Percent <sup>1</sup>	Glazing U-Value <sup>2</sup>	Ceiling R-Value <sup>3</sup>	Wall R-Value <sup>4</sup>	Floor R-Value <sup>5</sup>	Basement Wall R-Value <sup>6</sup>	Slab Perimeter R-Value <sup>7</sup>	Crawl Space Wall R-Value <sup>8</sup>	
1	15%	0.70	R-38	R-13	R-11	R-7	R-0	R-5	Normal
2	20%	0.65	R-30	R-13	R-21	R-19	R-19	R-24	Normal
3	25%	0.55	R-30	R-15	R-21	R-19	R-19	R-24	Normal
4	25%	0.50	R-38	R-16	R-11	R-8	R-2	R-6	Normal
5	30%	0.45	R-30	R-13	R-21	R-18	R-14	R-20	Normal
6	15%	Any	R-19	R-13	R-13	R-10	R-2	R-9	High Heating
7	20%	0.75	R-13	R-13	R-13	R-10	R-2	R-10	High Heating
8	25%	0.70	R-26	R-13	R-13	R-9	R-2	R-9	High Heating
9	30%	0.65	R-38	R-14	R-15	R-12	R-2	R-13	High Heating

# Prescriptive Packages - Zone 17

1992 Model Energy Code for Multifamily Buildings



Package	MAXIMUM		MINIMUM						Heating/Cooling Equipment Efficiency <sup>9</sup>
	Glazing Area Percent <sup>1</sup>	Glazing U-Value <sup>2</sup>	Ceiling R-Value <sup>3</sup>	Wall R-Value <sup>4</sup>	Floor R-Value <sup>5</sup>	Basement Wall R-Value <sup>6</sup>	Slab Perimeter R-Value <sup>7</sup>	Crawl Space Wall R-Value <sup>8</sup>	
1	15%	0.65	R-38	R-18	R-15	R-11	R-3	R-9	Normal
2	15%	0.60	R-30	R-13	R-21	R-18	R-19	R-20	Normal
3	20%	0.50	R-38	R-18	R-15	R-11	R-3	R-9	Normal
4	25%	0.45	R-38	R-19	R-19	R-16	R-12	R-16	Normal
5	25%	0.40	R-38	R-19	R-13	R-10	R-2	R-8	Normal
6	30%	0.35	R-38	R-19	R-15	R-11	R-2	R-9	Normal
7	15%	0.75	R-19	R-11	R-13	R-10	R-2	R-9	High Heating
8	20%	0.70	R-30	R-13	R-15	R-12	R-2	R-13	High Heating
9	25%	0.55	R-30	R-13	R-13	R-10	R-2	R-9	High Heating
10	30%	0.55	R-38	R-19	R-15	R-13	R-3	R-14	High Heating

## FOOTNOTES:

- <sup>1</sup> Glazing area is the ratio of the area of the glazing assemblies (including sliding-glass doors, skylights, and basement windows but excluding opaque doors) to the gross wall area, expressed as a percentage. Up to 1% of the total glazing area may be excluded from the U-value requirement. For example, 3 ft<sup>2</sup> of decorative glass may be excluded from a building design with 300 ft<sup>2</sup> of glazing area.
- <sup>2</sup> Glazing U-values should be tested and documented by the manufacturer in accordance with the National Fenestration Rating Council (NFRC) test procedure, taken from the glazing U-value table in Appendix B, or derived from an alternate test procedure or table accepted by your local jurisdiction. Center-of-glass U-values cannot be used.
- <sup>3</sup> The ceiling R-values do not assume a raised or oversized truss construction. If the insulation achieves the full insulation thickness over the exterior walls, R-30 insulation may be substituted for R-38 insulation and R-38 insulation may be substituted for R-49 insulation. Ceiling R-values represent the sum of cavity insulation plus insulating sheathing (if used). For ventilated ceilings, insulating sheathing must be placed between the conditioned space and the ventilated portion of the roof.
- <sup>4</sup> Wall R-values represent the sum of the wall cavity insulation plus insulating sheathing (if used). Do not include exterior siding, structural sheathing, and interior drywall. For example, an R-19 requirement could be met *EITHER* by R-19 cavity insulation *OR* R-13 cavity insulation plus R-6 insulating sheathing. Wall requirements apply to wood-frame or mass (concrete, masonry, log) wall constructions, but do not apply to metal-frame construction. Metal-frame wall equivalent R-values can be found in Appendix C.
- <sup>5</sup> The floor requirements apply to floors over unconditioned spaces (such as unconditioned crawlspaces, basements, or garages). Floors over outside air must meet the ceiling requirements.
- <sup>6</sup> Walls of conditioned basements below uninsulated floors must be insulated from the top of the basement wall to a depth of 10 ft below ground level or to the level of the basement floor, whichever is less. The entire opaque portion of basement walls with an average depth less than 50% below grade must meet the same R-value requirement as above-grade walls. Conditioned basement windows and sliding glass doors must be included with the other glazing. Basement doors must meet the door U-value requirement described in Note b.
- <sup>7</sup> The R-value requirements are for unheated slabs. Add an additional R-2 for heated slabs, except in Zone 1 which does not require slab insulation. For packages with a slab insulation requirement, the insulation must extend a total linear distance of at least 24 in. in Zones 2-12 and 48 in. in Zones 13-17. The insulation must extend  
1) down from the top of the slab, or  
2) down from the top of the slab to the bottom of the slab and then horizontally underneath the slab, or  
3) down from the top of the slab to the bottom of the slab and then horizontally away from the slab, with pavement or at least 10 in. of soil covering the horizontal insulation.
- <sup>8</sup> The crawl space wall R-value requirements are for walls of unventilated crawl spaces. The crawl space wall insulation must extend from the top of the wall (including the sill plate) to at least 12 in. below the outside finished grade. If the distance from the outside finished grade to the top of the footing is less than 12 in., the insulation must extend a total vertical plus horizontal distance of 24 in. from the outside finished grade.
- <sup>9</sup> *High Heating* means a furnace AFUE of 90% or more, or a heat pump HSPF of 7.8 or more. *High Cooling* means a SEER of 12 or more. *High Heat/Cool* means both heating and cooling equipment must meet these minimum efficiencies. If you plan to install more than one piece of heating equipment or more than one piece of cooling equipment, the equipment with the lowest efficiency must meet or exceed the efficiency required by the selected package. The following California counties do not qualify for the cooling equipment credit: Alameda, Contra Costa, Los Angeles, Marin, Monterey, Napa, Orange, San Benito, San Diego, San Francisco, San Luis Obispo, San Mateo, Santa Barbara, Santa Clara, Santa Cruz, Solano, Sonoma, and Ventura.

## NOTES:

- a) Glazing areas and U-values are maximum acceptable levels. Insulation R-values are minimum acceptable levels. R-value requirements are for insulation only and do not include structural components.
- b) Opaque doors in the building envelope must have a U-value no greater than 0.35. Door U-values must be based on manufacturer data, taken from the door U-value table in Appendix B, or derived from an alternate test procedure or table accepted by your jurisdiction. If a door contains glass and an aggregate U-value rating for that door is not available, include the glass area of the door with your windows and use the opaque door U-value to determine compliance of the door. One door may be excluded from this requirement (i.e., may have a U-value greater than 0.35).
- c) If a ceiling, wall, floor, basement wall, slab-edge, or crawl space wall component includes two or more areas with different insulation levels, the component complies if the area-weighted average R-value is greater than or equal to the R-value requirement for that component. Glazing or door components comply if the area-weighted average U-value of all windows or doors is less than or equal to the U-value requirement (0.35 for doors). Use the *R-Value/U-Value Weighted Average Worksheet* for these computations.